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REMARKS

In the Office Action, the Examiner noted that claims 2-18 are pending in the application, claim 1 is cancelled, and claims 2-18 are rejected. By this amendment, claims 2-5 and 8-10 have been cancelled without prejudice. Thus, claims 6, 7, and 11-18 are pending in the application. The Examiner's rejections are traversed below.

OBJECTION TO THE SPECIFICATION AND CLAIMS

The Examiner objects to the specification for failing to provide proper antecedent basis for the claimed subject matter, specifically, requiring further explanation of the term "non-zero spiral." The present amendment to the specification further explains the term, therefore providing sufficient antecedent basis for the claimed subject matter.

The amendment to the specification at page 32 is fully supported by the drawings at Figure 15. Specifically, the dashed line region of Figure 15 represents the blade section in polar coordinates without any spiral sections. The blade section in the configuration represented by the dashed region has a zero spiral, and any deviation from that representation, effectuates a spiral section in real coordinates, labeled "spiral" as element 1508, therefore defined as a "non-zero spiral."

Applicant asserts that by this amendment, no new matter has been added. Applicant respectfully requests that the objection to the specification, and the claims, be withdrawn accordingly.

REJECTION UNDER 35 U.S.C. § 102(e)

The Examiner has rejected claims 2-5 and 8-18 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,137,893 to Michael et al. (hereinafter, "Michael"). By this amendment, claims 2-5 and 8-10 have been cancelled without prejudice. Therefore, the rejection of claims 2-5 and 8-10 is now moot.

Michael teaches a method of analyzing an image of a calibration target to determine the location of the target in the image. The method determines the angle of linear features of the target, and derives a point at which they intersect. Further image analysis permits a refinement of the intersection point to determine a precise location.

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Regarding claim 11, Applicant's claim includes the limitation that at least one of the plurality of blades having a non-zero skew; a limitation not taught by Michael. Similarly, regarding claim 15, Applicant's claim includes the limitation that at least one of the plurality of blades having a non-zero spiral; a limitation not taught by Michael.

Michael teaches calibration targets having regions bounded by linear edges – straight line segments that are oriented toward a reference location or reference point. Michael, Figures 1A-1C, column 3, line 45 – column 4, line 24. The straight line segments of Michael's targets are necessary since the method for analyzing the position or location of the target in an image derives the location from the intersection of the straight line segments of the target.

The non-zero skew and non-zero spiral limitations of Applicant's claims 11 and 15 require that at least one of the plurality of blades have edge regions defined by spiral segments. Spiral segments are represented as linear segments in polar coordinates, though in a real plane, such as an image grid, spiral segments are not linear. The method of locating an object with these limitations is simply not disclosed by Michael, nor could it be disclosed since the method of locating the intersecting line segments would fail. Thus, the claimed invention according to claims 11 and 15 is patentably distinguished over Michael. Accordingly, Applicant respectfully asserts that the rejection of claims 11 and 15 under § 102(e) has been overcome.

Regarding claims 12-14 and 16-18, that depend from claims 11 and 15 respectively, Applicant respectfully asserts that for reasons analogous to that argued above for claims 11 and 15, the rejection under § 102(e) has been overcome.

REJECTION UNDER 35 U.S.C. § 103(a)

The Examiner has rejected claims 6 and 7 under 35 U.S.C § 103(a) as being unpatentable over Michael and further in view of U.S. Patent 5,125,035 to McCarthy et al. (hereinafter, "McCarthy").

McCarthy teaches a system that determines the true position of cooling holes manufactured in turbine blades. It is important to note that the "blade" in McCarthy is a turbine blade – an "object" of inspection, not a "blade" of a target rendered on the object

as claimed by Applicant. The system in McCarthy manipulates the turbine blade object presented to a video camera, positioning the object so that a hole having an expected location in the object is aligned with the camera. The actual location of the hole is derived from an image of the hole, and the derived location is compared to the expected location in an inspection operation. McCarthy only stands for the proposition that hole features can be located in an image, and the position of the located hole compared to the expected location of the hole. There is nothing taught or disclosed in McCarthy or Michael to teach or suggest that at least one blade in a plurality of blades *of a target* including at least one hole, can be located to provide a pose of an object bearing the target. The combined teachings of Michael and McCarthy fail to teach or suggest that a target having hole features can be the least bit advantageous in locating the target.

Regarding claims 6 and 7, the Applicant claims at least one hole in at least one, or each, blade in a plurality of blades *in a target*. The Applicant respectfully asserts that these claims are not obvious to one of ordinary skill in the art.

According to the MPEP, to establish a prima facie case of obviousness under § 103(a), "three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations."

For reasons stated above, there exists no suggestion or motivation to combine the teachings of Michael and McCarthy, to support a rejection for obviousness under § 103(a). Further, the combined teachings of Michael and McCarthy fail to teach all the limitations of claim 6 and 7, specifically, the inclusion of at least one hole in at least one or each blade of a target having a plurality of blades. Accordingly, the Applicant respectfully asserts that the rejection of claims 6 and 7 under § 103(a) has been overcome.

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CONCLUSION

In view of the above remarks, Applicant respectfully requests withdrawal of all rejections and allowance of the claims pending in the application. The Examiner is invited to telephone the undersigned Applicant's Attorney to facilitate advancement of the present Application.

Respectfully submitted,



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